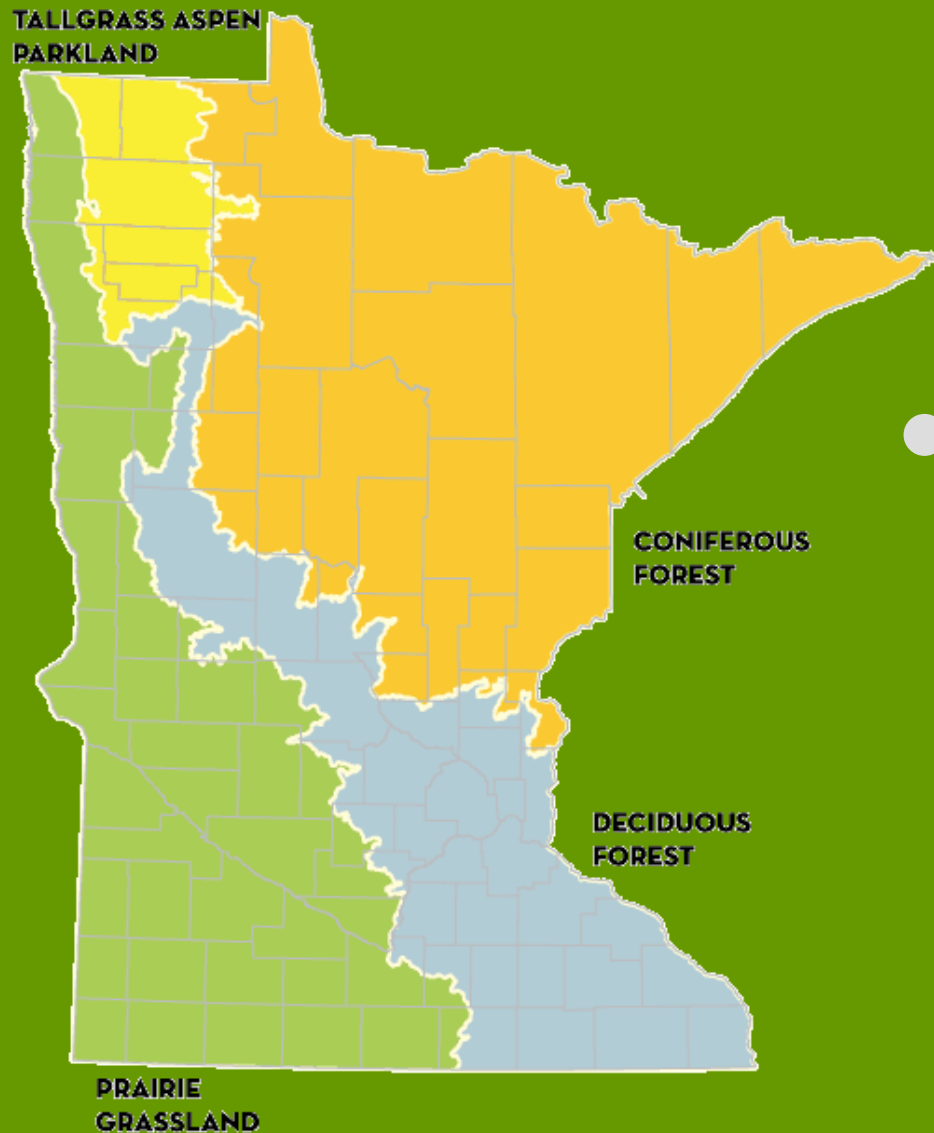


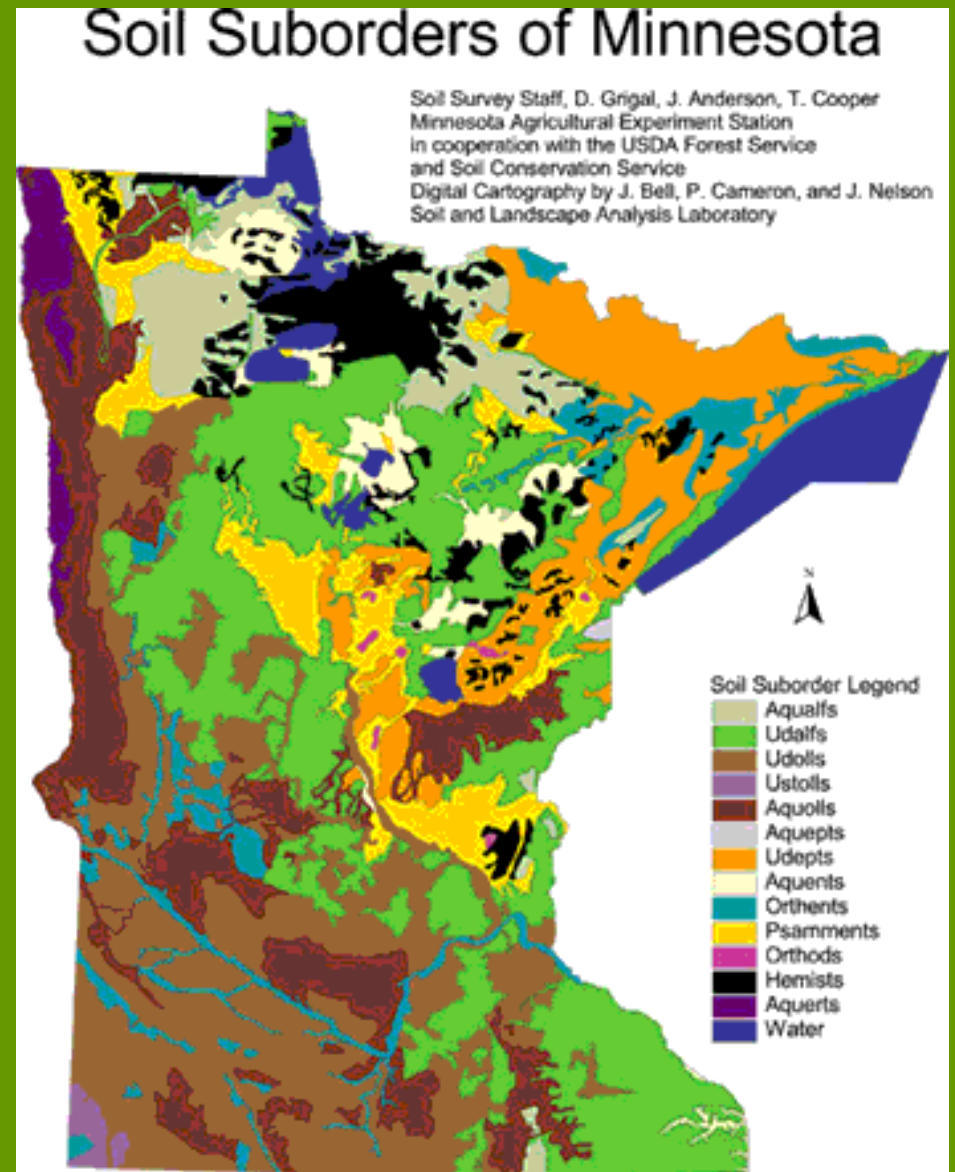
Agriculture and Water Quality





- **Minnesota
vegetation –
early 1800s**

- **Minnesota's
soils –
Agriculture's
foundation**



Then...

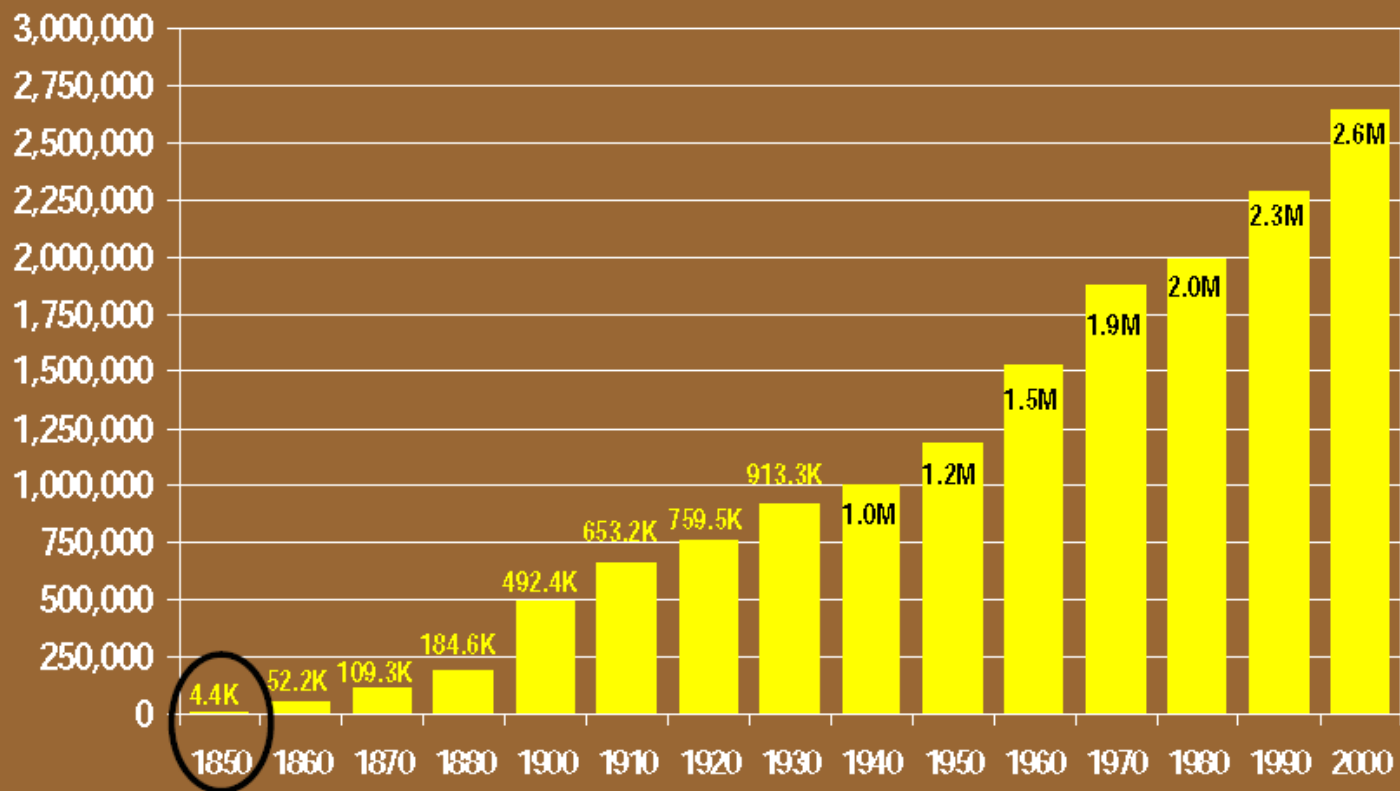




... and now

Population Growth

Minneapolis/Saint Paul Area



- 81,000 farms
- 27 million acres
- \$13 billion in production
- Corn, soybeans, wheat, sugarbeets, hay, potatoes, sweet corn, peas, sunflowers
- Pork, milk, beef, poultry and eggs



Drainage ditches



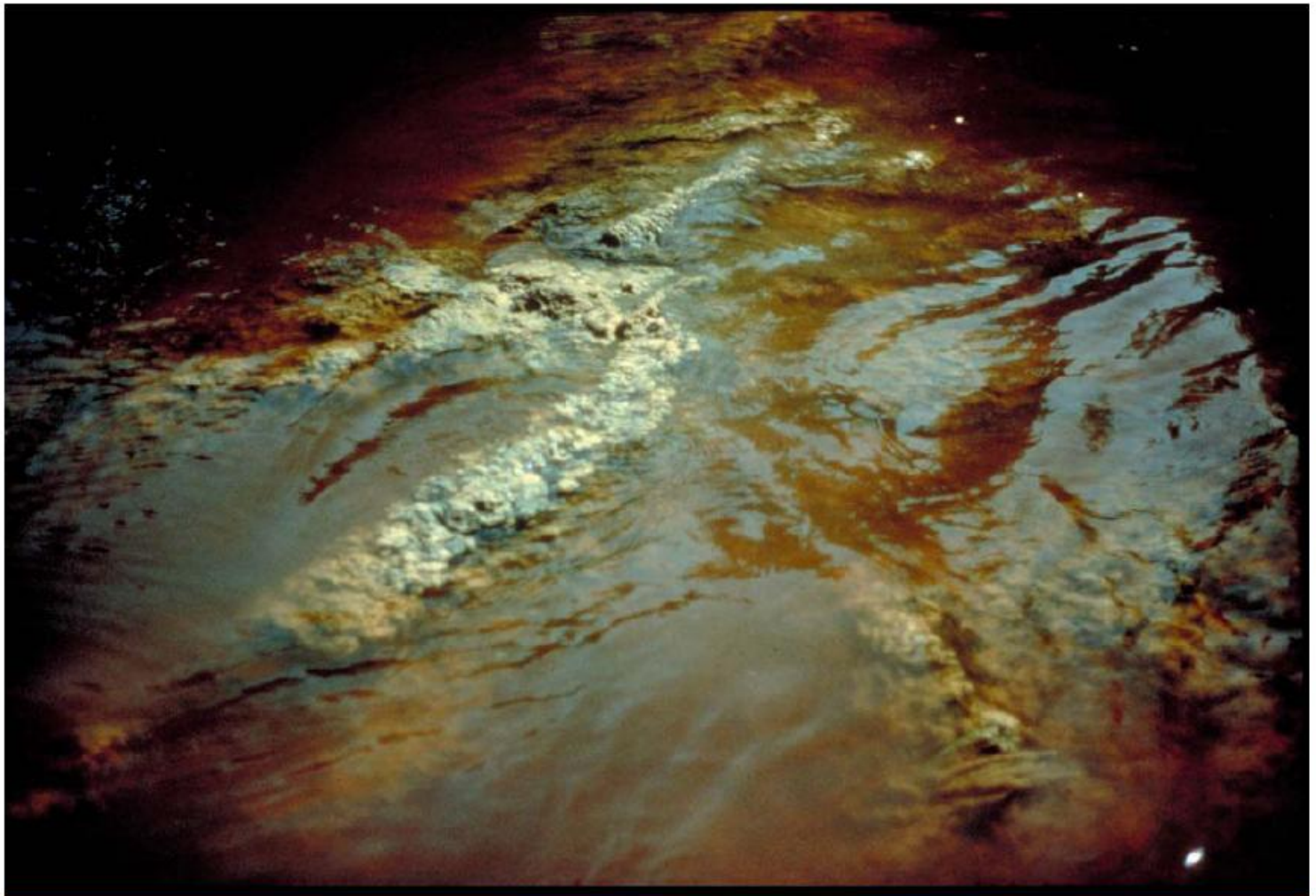


Subsurface drainage tile

Water erosion



**And wind erosion-
Threats to
productivity and
water quality**



Sewage in the Mississippi: May 1933

Impaired Waters Concerns

- **Sediment**
- **Nutrients**
- **Bacteria**



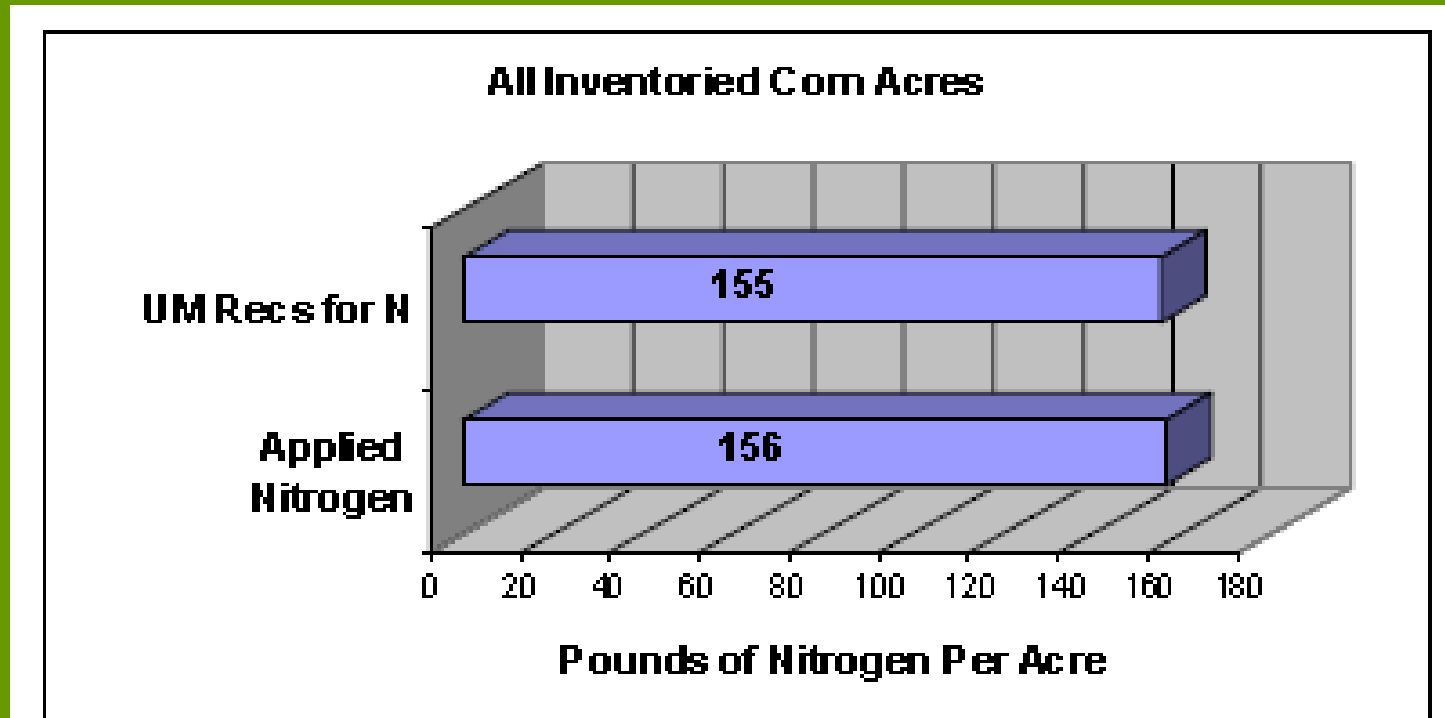
Evolution of Ag practices

- Buffer strips
- Filter Strips
- Waterways
- CRP

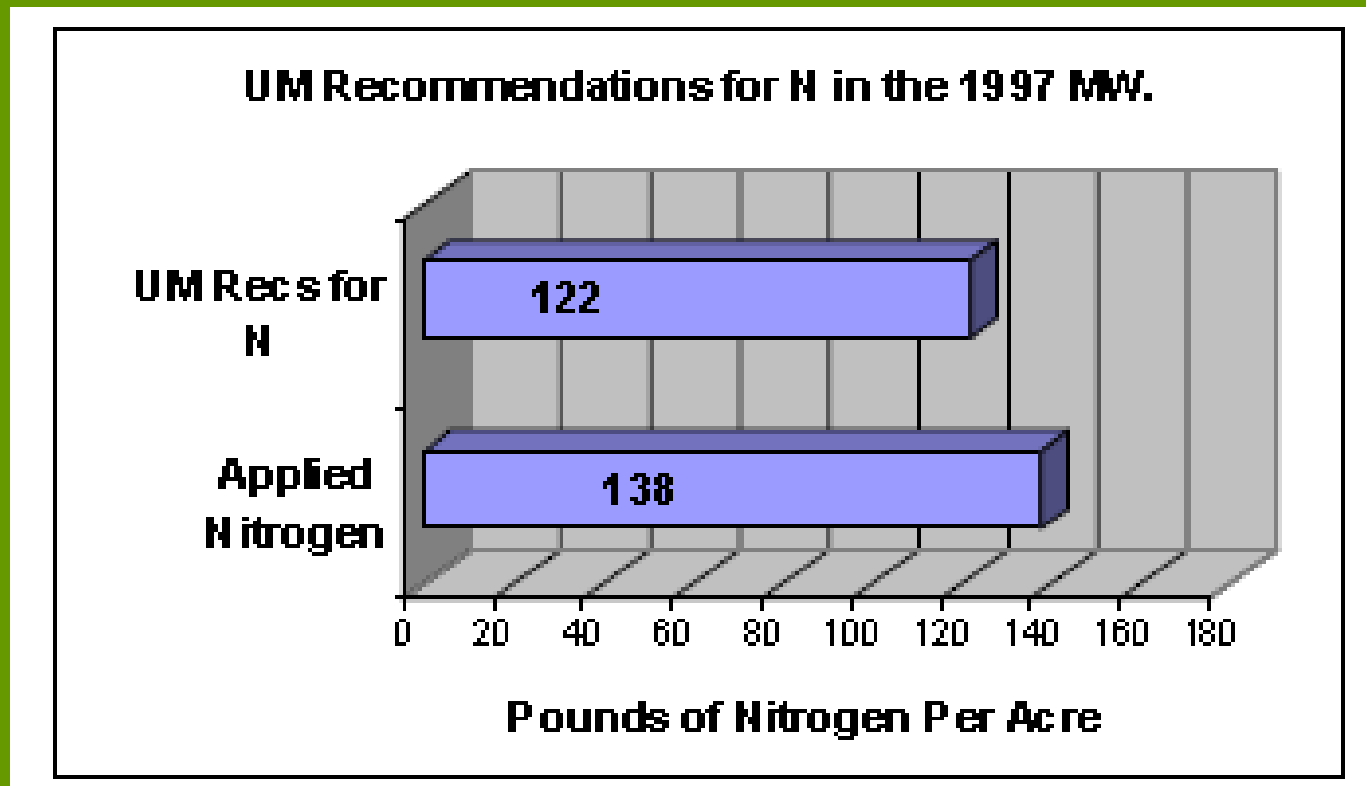


- Reduced tillage
- Nutrient efficiency
- Manure management

MDA Whitewater River Nutrient Management Assessment

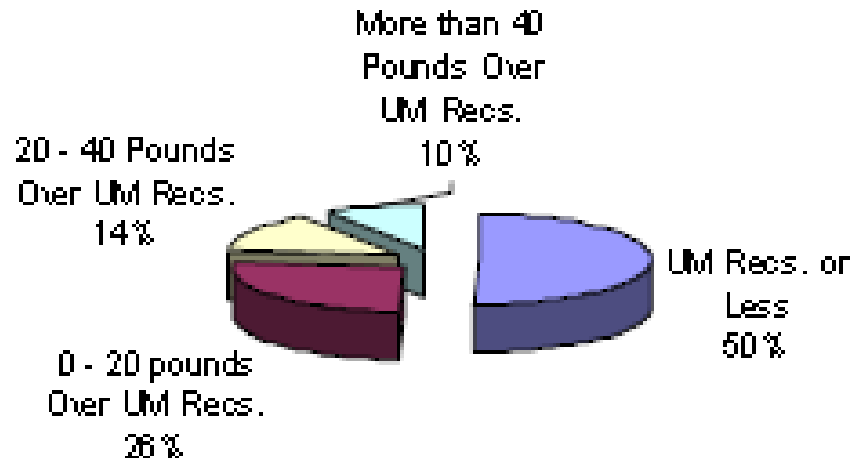


MDA Whitewater River Nutrient Management Assessment



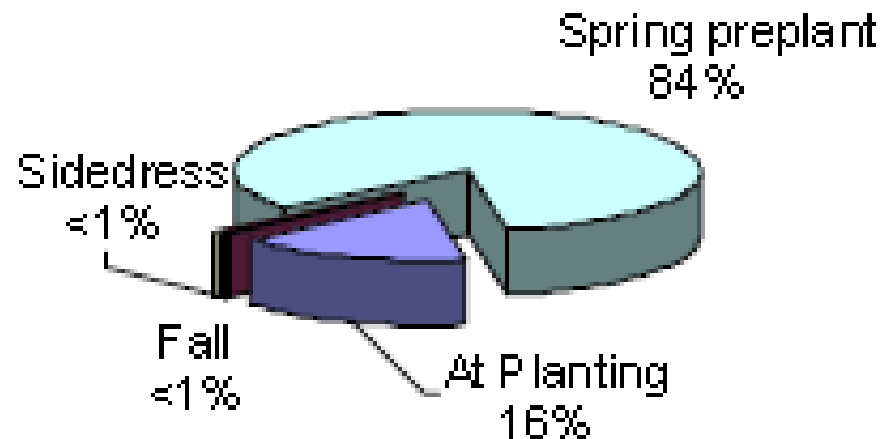
MDA Whitewater River Nutrient Management Assessment

**Com Acres in Regard to N Applied and
the UM Recommendations**



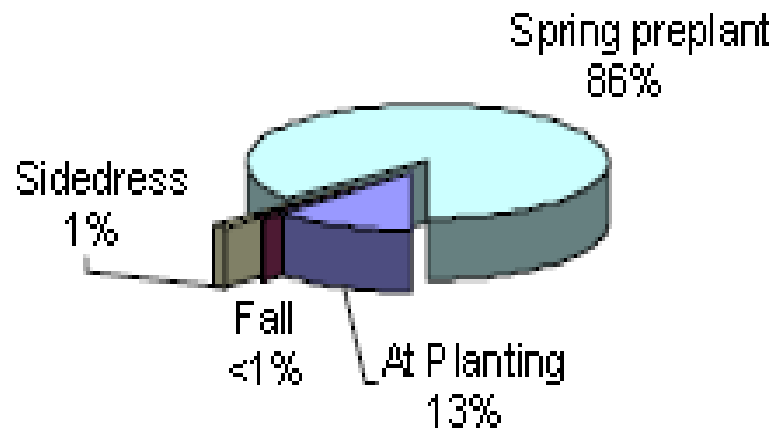
MDA Whitewater River Nutrient Management Assessment

**Timing of Commercial N Applications
in the Middle Branch Watershed**

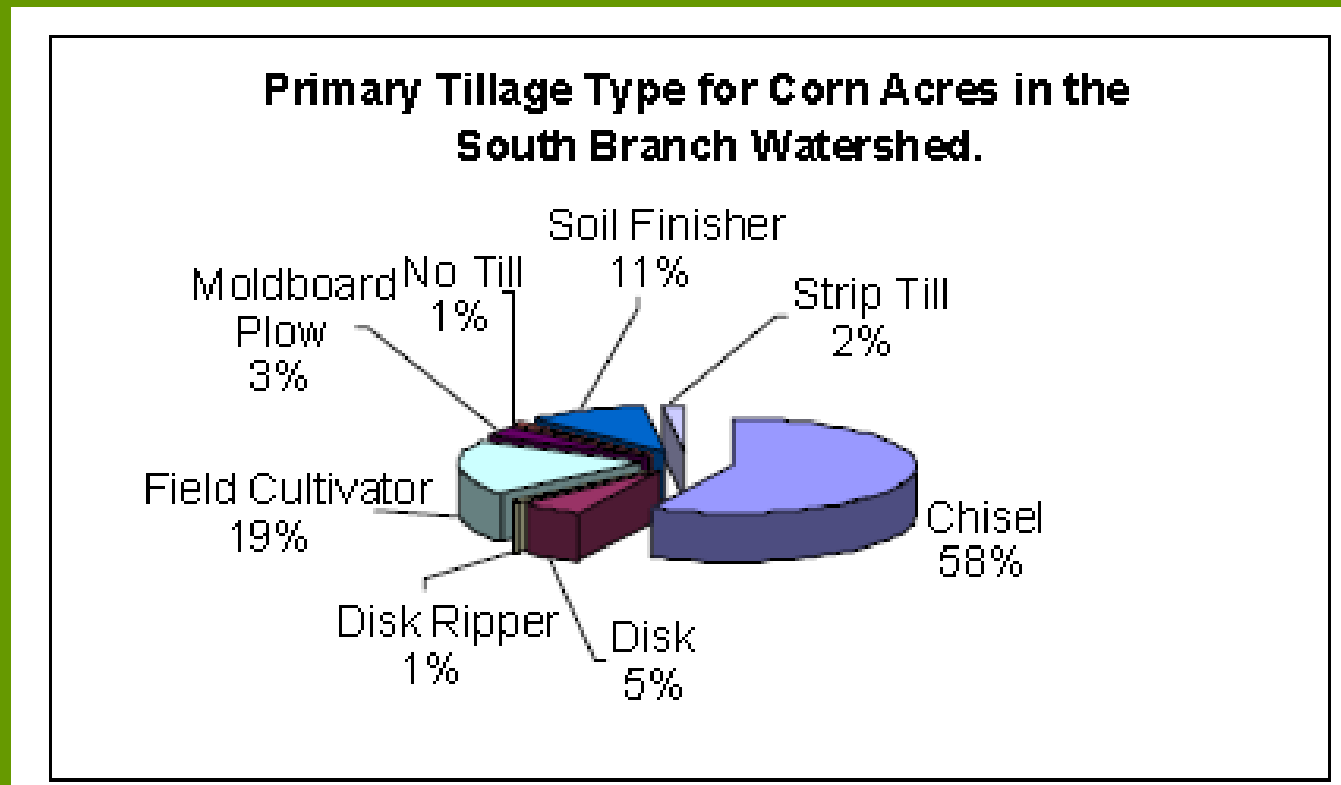


MDA Whitewater River Nutrient Management Assessment

**Timing of Commercial N Applications
in the South Branch Watershed**

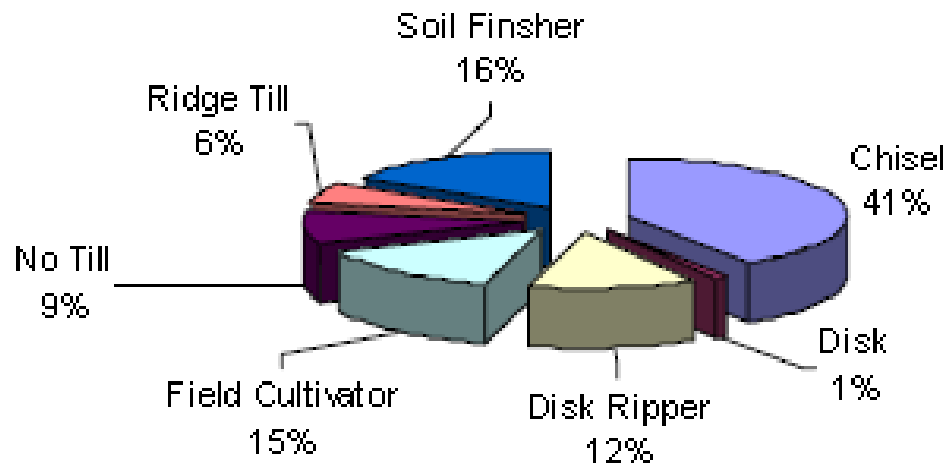


MDA Whitewater River Nutrient Management Assessment



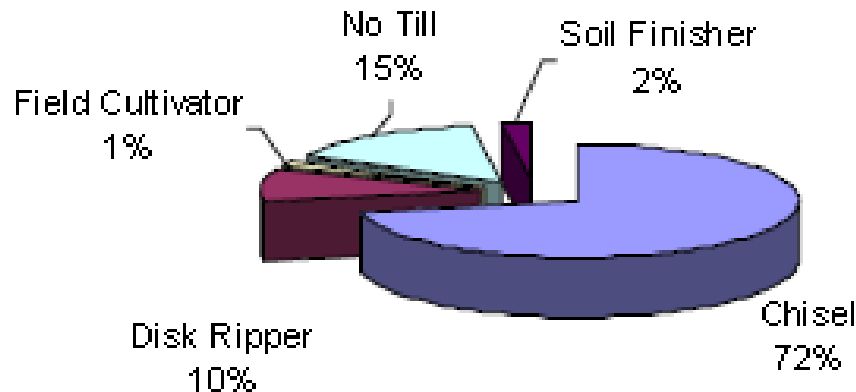
MDA Whitewater River Nutrient Management Assessment

Primary Tillage Type for Corn Acres in the Middle Fork Watershed.



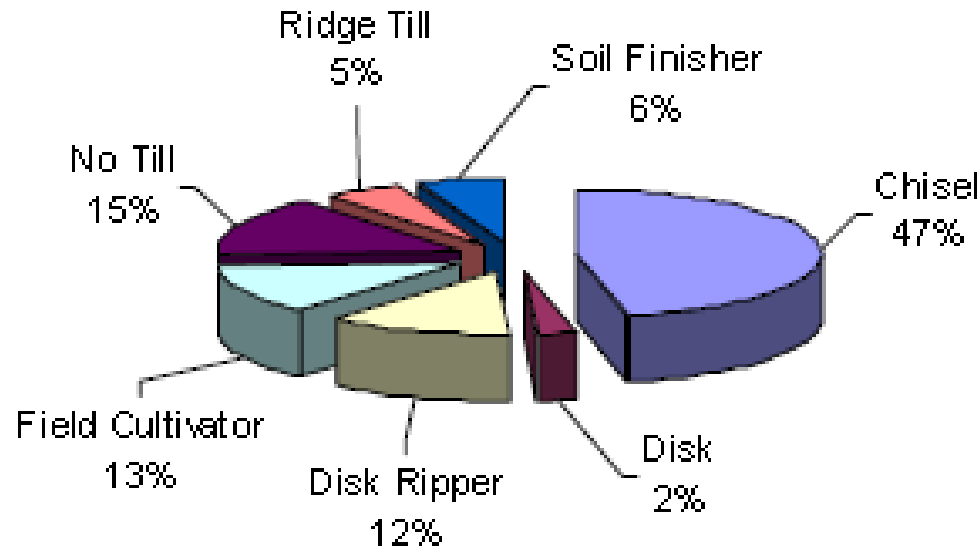
MDA Whitewater River Nutrient Management Assessment

Primary Tillage Type for Soybean Acres in the South Fork Watershed.



MDA Whitewater River Nutrient Management Assessment

Primary Tillage Type for Soybean Acres in the Middle Fork Watershed.



MDA Whitewater River Nutrient Management Assessment

The bottom line:

Producers are applying the right amount of nutrients

at the right time,

and using appropriate tillage,

**because it makes good business sense
and good environmental sense.**

Ag BMP Adoption well underway



Confluence- Mississippi and St. Croix Rivers



Confluence- Colorado and Green Rivers



Confluence- Missouri and Milk Rivers

Rivers that flow through very different geological settings make for very cool visuals!!

